

Self-reported Physical Activity Recall, Pedometer Counts and EMA with Mexican-American Women

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Challenge:

- Physical activity is typically measured via “physical activity recall” methods, a self report approach requiring retrospective recording of what participants were doing during each waking hour (or other interval) of the day
- Accelerometry (e.g., with CSA or Actigraph instruments) generally provides highly reliable and valid measures of all levels of physical activity, but can be very expensive and intrusive

Challenge (cont.)

- Self report of physical activity is very complex and of questionable reliability
- Especially difficult for individuals with low levels of literacy or acculturation
- Biases toward over-reporting physical activity; with Mexican-American participants, desire to “help the investigator”
- Tendency to forget to record or forget specific activities or levels (moderate, vigorous or very vigorous)

- An EMA design was used in the present study to attempt to promote more timely recording of physical activity, thereby enhancing its reliability and validity.
- With respect to validity, pedometers were worn to obtain an approximate but objective measure of overall activity.



Present Study

Assessed reliability of physical activity recall compared to pedometer counts under two conditions: with or with out EMA prompts (via pagers).

Pedometers measure overall number of steps, but make no distinction between larger and smaller steps, nor therefore between moderate and vigorous activity levels (as do accelerometers)

Participants:

- 51 Mexican -American women (45 immigrants); all participants in a previous study of nutrition



Participants (cont.)

- Mean years in USA: 16 (s.d. = 9.4)
- Mean age: 41 (9.5)
- 67% married
- Income: 25 (49%) < \$2k/mo.; 5 (10%) < 1k
- 15 (30%) employed full or part time

Methods

- All participants maintained self-report physical activity recalls (“PARs”) for 3 consecutive days
- These recalls were meant for all activities, regardless of whether the participant was engaged in moderate , vigorous, or very vigorous activity.

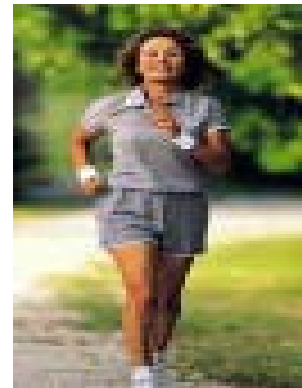
Moderate Activity

- Less than 3.5 kcal/minute
- Walking casually, less than 3 m.p.h.; biking less than 5 m.p.h., stretching, light weight training, slow dancing



Vigorous Activity

- 3.5 – 7 kcal/minute
- Walking at a moderate or brisk pace of 3 – 4.5 mph on a level surface, hiking, biking 5 – 9 mph, water aerobics, light calisthenics, line dancing



Very vigorous activity

- > 7 kcal/minute
- Racewalking, jogging, biking > 9 mph, step aerobics, vigorous calisthenics, jumping rope



El Reporte de Actividad Física es una entrevista estructurada para determinar el tiempo individual realizado durante cada actividad física, incluyendo fuerza y actividades de flexibilidad en los últimos tres días.

INSTRUCCIONES DEL CUENTAPASOS:

- El cuentapasos es un aparato pequeño, ligero y fácil de usar.
- No funcionará correctamente si el cuentapasos está un poco ladeado o mal colocado.
- Le recomendamos que una vez que se levante por la mañana lo use todo el día.

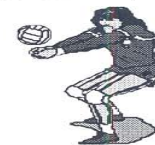
MODO DE EMPLEO DEL CUENTAPASOS:

- Coloque el cuentapasos en la pretina de su pantalón, falda o cinturón aproximadamente en línea recta con sus rodillas y paralelo al piso.
- Primero póngaselo correctamente y después préndalo antes de empezar a caminar.
- Presione el botón amarillo para prender el cuentapasos y empezar a contar desde ceros.
- Al final del día, antes de irse acostar, escriba el número total que aparece en la pantalla y presione el botón amarillo para borrar y volver a empezar.
- Repita el mismo procedimiento durante los tres días.

Actividad Moderada es similar al caminar a paso normal, la respiración es despacio y solo consiste en un poco de movimiento. (Ejemplos: limpieza en el hogar, jardinería, caminar a paso normal, hacer el mandado.)



Actividad Vigorosa: La actividad Física es más difícil que al caminar pero no es muy vigorosa como el correr, se encuentra en medio de moderado y muy dificultoso. La respiración aumenta y el movimiento es moderado. (Ejemplos: nadar por diversión, levantamiento de pesas, bailar, volleyball.)



Actividad Muy Vigorosa: Es similar al correr, la respiración es rápida al igual que el movimiento. (Ejemplos: correr, andar en bicicleta, jugar fútbol soccer, escalar montaña.)



Methods (cont.)

- Pedometers worn all day; counts recorded at nighttime



- Physical activity recall records broken down into minutes of moderate, vigorous, and very vigorous activity

Methods (cont.)

- A randomly selected 26 of the 51 volunteer participants given 3 daily phone pager prompts to update physical activity recalls on a block randomized schedule (0800 – 1200, 1200- 1600, 1600 – 2000)
- Block random selection was used to enhance validity while ensuring representation from functionally distinct time periods with respect to physical activity

Use los siguientes símbolos para indicar el lugar donde realizó sus actividades físicas:

1.Marque ★ las actividades en el trabajo

2.Marque ● las actividades en el hogar

3. Marque ✓ las actividades deportivas

4. Marque X si la actividad fue con intención de mejorar su condición física.

Instrucciones:

- Escriba por cuanto tiempo realizó las actividades físicas en la tabla de abajo durante los tres días.
- Identifique la intensidad de cada una de las actividades físicas observando los ejemplos de la primera pagina: **moderadas, vigorosas o muy vigorosas.**
- Al final del día, antes de irse acostar escriba el numero total que marca el cuentapasos en el Reporte de Actividades.
- Repita el mismo procedimiento durante los tres días.

DIA 1: _____

Actividad	MODERADA	VIGOROSA	MUY VIGOROSA
MAÑANA Desde que se levanta hasta las 12:00p.m. ►			
TARDE Desde las 12:01pm hasta las 5:00p.m. ►			
NOCHE Desde las 5:00p.m. hasta ir a dormir ►			
Número total del cuentapasos			
Número total de minutos			

Results

- Vigorous activity/ very vigorous activity were correlated 0.21. All other relationships within types of activity were zero order or negative.
- Pedometer correlations with moderate, vigorous, and very vigorous activity, respectively, were -.24, .20, and .43.
- Pedometer/ overall activity correlation was .05

Results (cont.)

- The pager prompt condition was associated with substantially less reporting of vigorous activity in that group. All other group/activity level (moderate and very vigorous activity) associations were zero order.

Recall and pedometer correlations, by group

Activity level	Pager Number of steps \underline{r}	Control Number of steps r	Fisher's Z- value	Signifi- cance level
Moderate	-.37	.09	72.5	.001
Vigorous	.40	.19	22	.01
Very vigorous	.08	.79***	99	.001.
Mod + Vig + Very vig	.27	.25	.66	ns

Results (cont.)

- All participants reported that the pedometers were easy to use, and did not prompt an increase in physical activity, either with or without the pager.
- Participants using the pager reported few problems or concerns with this device, compliance rate = 96% (i.e., all but 2 wore the pagers for all 3 days).

How easy was it to use the...	Easy/very easy	Not easy; I would not use it again	I never really used it
pager	22 (84%)	3 (11%)	1 (4%)
pedometer	51 (100%)		

Conclusions

- Lower socioeconomic status, Spanish-speaking women seem to reliably report levels of vigorous and very vigorous physical activity
- Moderate activity is apparently over-reported in this group, or is under-detected by pedometers.
- EMA methodology may lead to more accurate reporting of levels of vigorous activity

Lessons learned

- Physical activity diaries may yield useful information in this population
- Physical activity data collection may be affordably enhanced by pedometers
- Indeed, pedometers may have served as an auxillary EMA prompt in the present effort
- Accelerometry, however, may be needed to distinguish among levels of physical activity, especially for more moderate levels

Lessons learned (cont.)

- EMA may increase accuracy of self-report by reducing over-reporting, and
- helping participants recall more routine activities, especially those of moderate intensity (e.g. leisurely walking)
- Future efforts of this nature may benefit from more training as to what to record, and more precise validation

